

# Asset Management

## SWP Aging Infrastructure and Project Prioritization

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# Asset Management Introduction

## Presentations to the Water Commission

- March 2018, November 2018, & March 2021

## Completed Activities

- Initial Strategies has been developed
  - Strategic Asset Management Plan
  - Risk Management Framework
  - Maintenance Management Strategy
  - Data Management Strategy
- Supporting Policies are in place
- Risk-informed process for capital improvements
- Long-term investment forecast
- Condition Assessment Program enhancements

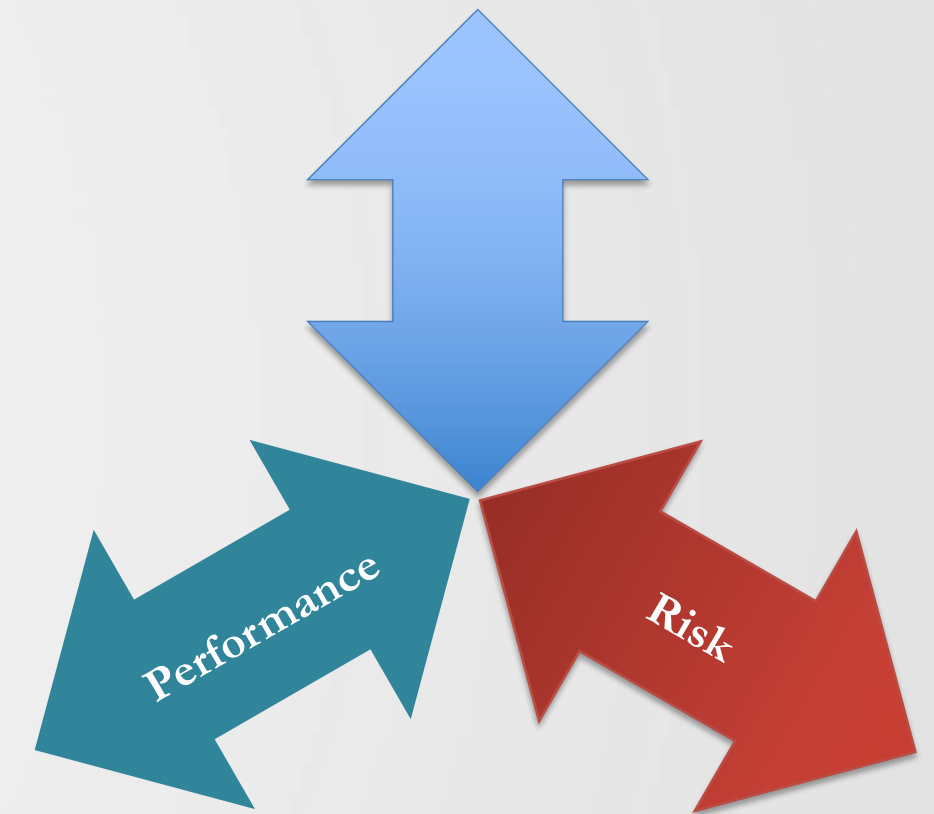
## Ongoing Activities

- Annual Project Prioritization
- Risk-informed asset management plans
  - Transformers, Pipelines, South Bay Aqueduct
- Asset Hierarchy and Register Update
- Strategic Asset Management Plan Update
- Business Case Evaluation Process



# Project Prioritization

- Project Prioritization is one component of DWR's approach to asset management (AM)
  - Builds upon other AM processes
    - Risk identification through inspections, condition assessments, and studies
    - Risk assessment for each proposed project using common matrix
    - Financial management and Resource planning
- Approach considers mandatory requirements, benefits, risk, and resources to find the right balance between performance, cost, and risk





# Background & Concepts

## Why do we perform prioritization?

- O&M has more work to do than resources to perform it
  - 2020 Long-term investment forecast: estimated over \$8 billion in capital investment needs over the next 20 years
  - Division of O&M identifies over 300 projects capital and extraordinary O&M projects each year *totaling ~\$300-\$400M/year*
  - DWR has human and financial resources for approximately 200 O&M projects totaling ~\$250M each year





# Background & Concepts

- We using prioritization to determine how to:
  - Do the right work
  - At the right time
  - With the right resources
- DWR has developed structured and repeatable process based on best practice
  - A risk assessment is completed for every proposed project using the O&M risk matrix
    - This allows every project to be compared against another in terms of risk to the organizational goals and the amount of risk reduced if the project is selected
    - Also informs management of the risks accepted or carried forward if a project is deferred or not selected



# Annual Planning Process





# Risk

## Why do we use risk to inform prioritization?

- To select a portfolio of projects that reduces the most risk in the least amount of time with the available funding and resources
- Public utilities often use risk, rather than other options such as (Net Present Value) NPV to evaluate the priority and urgency of project and other actions
- Risk scoring assigns a quantitative value to the risk associated with an issue or event
- O&M has implemented an industry good practice employing quantified risk as a tool to help prioritize capital spending





# Thinking About Risks and Projects

## How do we develop risk treatment options?

- Focus on the issue or event requiring action
- “Do Nothing” is always an option
  - But “ignore it” is not the same as a conscious decision to accept the risk
- A project is **NOT** the only way to reduce risk
  - Operational changes, monitoring, response plans, changes in maintenance, further evaluation, etc. are all options that are considered
- Recognize that in the real-world risk often cannot be completely eliminated, but can be reduced to acceptable levels
- Consider options in the context of the issue being addressed and the organization’s goals



# DWR Risk Matrix

- Semi-Quantitative Approach
  - 7x7 matrix
- Consequence criteria based on SWP Strategic Plan
  - Public Safety
  - Personnel Safety
  - Compliance
  - Water Delivery
  - Other SWP Purposes
  - Reputation
  - Financial Impact

Likelihood		DWR Division of Operations & Maintenance Risk Matrix						
Likely to occur 10 times a year	7	7	14	21	28	35	42	49
Likely to occur within 1 year	6	6	12	18	24	30	36	42
Likely to occur within 3 years	5.5	5.5	11	16.5	22	27.5	33	38.5
Likely to occur within 10 years	5	5	10	15	20	25	30	35
Likely to occur within 30 years	4.5	4.5	9	13.5	18	22.5	26	31.5
Likely to occur within 100 years	4	4	8	12	16	20	24	28
Likely to occur within 1000 years	3	3	6	9	12	15	18	21
Likely to occur within 10,000 years	2	2	4	6	8	10	12	14
Likely to occur within 100,000 years	1	1	2	3	4	5	6	7
		Consequence						
Consequence Category		1 Insignificant	2 Minor	3 Moderate	4 High	5 Major	6 Extreme	7 Catastrophic



# DWR Risk Matrix

- Strict adherence to the likelihood and consequence criteria removes subjectivity and allows for comparison of risks...
  - Across a diverse set of assets
  - One project against others

Conseq. Category	Consequence						
	1 Insignificant	2 Minor	3 Moderate	4 High	5 Major	6 Extreme	7 Catastrophic
Public Safety	<ul style="list-style-type: none"> <li>▪ No injury</li> <li>▪ No damage to public or private property</li> </ul>	<ul style="list-style-type: none"> <li>▪ Near miss</li> <li>▪ Or minor property damage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Minor injuries not requiring medical attention</li> <li>▪ Or moderate property damage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Single injury requiring medical attention</li> <li>▪ Or moderate property damage over large area</li> </ul>	<ul style="list-style-type: none"> <li>▪ Multiple injuries or permanent disability</li> <li>▪ Or major property damage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fatality</li> <li>▪ Or major property damage over large area</li> </ul>	<ul style="list-style-type: none"> <li>▪ Multiple Fatalities</li> </ul>





# Project Risk Scoring & Financial Efficiency

Likelihood		DWR Division of Operations & Maintenance Risk Matrix						
Likely to occur 10 times a year	7	7	14	21	28	35	42	49
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		Consequence						
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**Pre-Project Risk**  
If no action is taken, risk is here

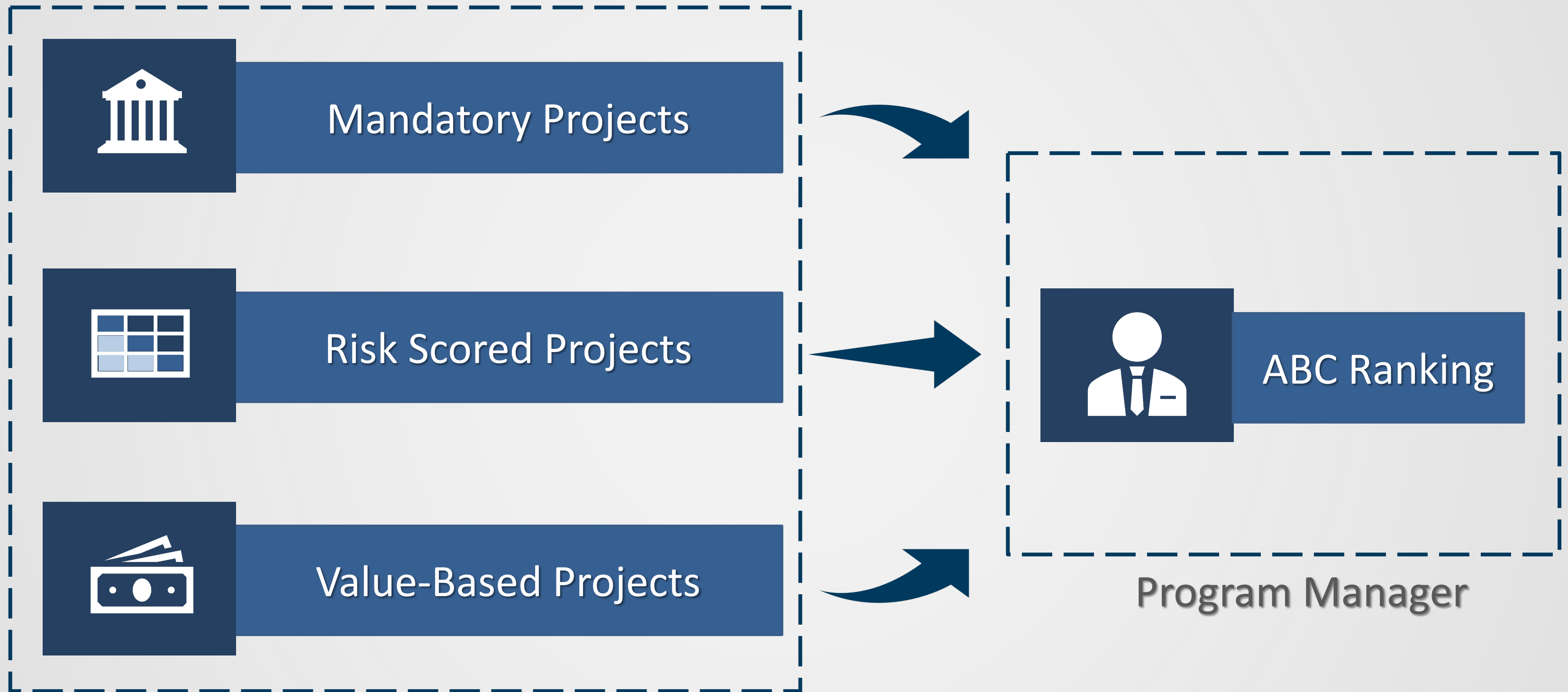
**Mitigated Risk**  
We have reduced risk by X points

**Financial Efficiency**  
Risk reduced per dollar spent

**Post-Project Risk**  
If action is taken risk is here



# Prioritization – Use of ABC Ranking



# ABC Project Ranking

- ABC rankings are intended to capture projects that don't show well in terms of risk, but are nonetheless important to the organizational goals
- Established targets for number of projects designated at each level and expected performance

Rank	Priority Description	Target % of Program Projects	Target Milestones
A	Must do now	10%	90% of project milestones will be achieved
B	Need to do now	40%	75% of project milestones will be achieved
C	Should do now	50%	50% of project milestones will be achieved

- Projects are initially ranked by Program Managers across their program areas considering current and mitigated risks, cost, resources, and other benefits (value)
- Program rankings are then reviewed/adjusted by team of managers to reflect the priorities across the Division of O&M





# Prioritization Outputs

- Results of the annual project prioritization process
  - 2-year prioritized project plan
    - Year 1 is the SWP Budget for the upcoming calendar year
    - Year 2 is the cost allocation basis for the upcoming Statement of Charges (revenue collection under the Long-Term Water Supply Contracts)
  - 5-year Specialized O&M Project Plan
    - ~200 projects per year
    - ~\$250M per year

